In This Section

- Identified Basin Planning and Management Concerns
- Priorities for Water Quality Concerns
- Priorities for Water Quantity Concerns

Concerns and Priority Issues

The assessments in Section 5 present a number of water quality and quantity concerns within the Satilla River basin. This section aggregates the assessment data to identify priority issues for development of management strategies.

6.1 Identified Basin Planning and Management Concerns

Section 4 and 5 identified both site-specific and generalized sources of water quality stressors. Some issues are limited to specific segments, but a number of water quality concerns apply throughout the basin. The criterion listed most frequently in the Georgia 2000 305(b)/303(d) List as contributor to nonsupporting or partial supporting status was low dissolved oxygen followed by fecal coliform bacteria and fish consumption guidelines. Low dissolved oxygen conditions have been documented for many years in the waters of the Satilla River and this situation is likely due primarily to natural conditions. Fish consumption issues are associated primarily with mercury as a result of air deposition and possibly naturally occurring sources and fecal coliform is associated primarily with urban runoff or nonpoint sources.

Within some individual stream reaches, other sources may be of greater importance (e.g., WPCP effluent); however, urban runoff and general nonpoint sources represent a basin-wide concern. Further, strong population growth and development pressure in parts of the basin will tend to increase the importance of urban runoff as a stressor of concern. For such widespread concerns, basin-wide management strategies will be needed.

Major water quality and quantity concerns for the Satilla River basin are summarized by geographic area in terms of the concerns and sources of these concerns in Table 6-1. Table 6-2 summarizes the pollutants identified as causing impairment of designated uses in the basin; however, not all identified concerns are related to pollutant loads. Ongoing control strategies are expected to result in support of designated uses in a number of waters. In other waters, however, the development of additional management strategies may be required or implemented in order to achieve water quality standards.

Table 6-I. Summary of Concerns in the Satilla River Basin

Stressors of Concern	Potential Source of the Stressor by HUC		
	HUC 03070201	HUC 03070202	HUC 03070203
Dissolved Oxygen	Urban and Rural NPS	Urban and Rural NPS	Multiple source potential
Metals			Industrial source
Fecal Coliform Bacteria	Multiple source potential	Multiple source potential	
Fish Consumption Guidelines	Nonpoint mercury		Industrial source, nonpoint source, PCBs persisting in environment
Erosion and Sedimentation	Urban and Rural NPS	Urban and Rural NPS	Urban and Rural NPS
Drought Conditions	Lack of Rainfall	Lack of Rainfall	
Widespread Flooding	Heavy Rainfall	Heavy Rainfall	Heavy Rainfall
Saltwater Intrusion			Heavy pumping in coastal areas for municipal and industrial purposes

Table 6-2. Summary of Pollutants Causing Water Quality Impairment in the Satilla River Basin

Use Classification of Waterbody Segments	Pollutants Causing Impairment by HUC		
	HUC 03070201	HUC 03070202	HUC 03070203
Fishing (Support for Aquatic Life)	DO, Fecal Coliform	DO, Fecal Coliform	DO, Metals
Fishing (Fish Consumption)	Mercury		PCBs, Mercury
Drinking Water			

In the following pages, priority water quality and quantity concerns are presented by Hydrologic Unit. For some water quality and quantity concerns, problem statements are identical for each HUC, others differ between HUCs. Detailed strategies for addressing these concerns are then supplied in Section 7.

Each concern is listed in the form of a "Problem Statement" which summarizes the linkage between stressor sources and water quality impacts. The order in which concerns are listed for each HUC should not be considered to be significant. Prioritization of basin concerns requires consensus among all stakeholders, and has not been finalized; however, short-term water quality action priorities for EPD are summarized in Section 6.2.

6.1.1 Problem Statements

Satilla River Subbasin (HUC 03070201)

Low Dissolved Oxygen

The water use classification of fishing was not fully supported in thirteen tributary segments and three Satilla River mainstem segments due to dissolved oxygen concentrations less than standards. Dissolved oxygen may be lower in these areas due to natural conditions.

Fecal Coliform Bacteria

The water use classification of fishing was not fully supported in eleven Satilla River tributary stream segments due to exceedances of the water quality standard for fecal

coliform bacteria. These may be attributed to a combination of urban runoff, septic systems, sanitary sewer overflows, rural nonpoint sources and/or animal wastes.

Fish Consumption Guidelines

The water use classification of fishing was not fully supported in two Satilla River mainstem segments due to fish consumption guidelines recommended because of mercury residues. The guidelines are for largemouth bass, redbreast sunfish and/or channel catfish.

Erosion and Sedimentation

The water use classifications of fishing, recreation, and drinking water are potentially threatened in waterbodies by erosion and loading of sediment which can alter stream morphology, impact habitat, and reduce water clarity. Potential sources include urban runoff and development (particularly construction), unpaved rural roads, forestry practices, and agriculture. There are no stream segments listed at this time in this subbasin as not fully supporting designated water uses due to poor fish communities or sedimentation.

Drought Conditions

Drought conditions during the 1998-2000 period impacted the Atlantic Coastal Plain region of the state, which includes the Ocmulgee, Oconee, Altamaha, Ogeechee, Savannah, St. Marys and Satilla river basins. According to EPD's 1998-2000 "Georgia Drought Report," the rainfall shortage in this region amounted to almost 25 inches. The report provides a summary of the environmental, economic, and social impacts of the drought and an objective assessment of the state's vulnerability and mitigation efforts. In addition, the report evaluates the management actions implemented by state and local authorities during the drought and presents a set of recommendations for improving drought preparedness and response.

Widespread Flooding

In March 1998, Georgia experienced widespread flooding due to heavy rainfall. The severity of the rain and the damages that resulted from flooding caused more than 65 percent of Georgia's counties to be declared federal disaster areas under Presidential Disaster Declaration 1209. Counties that experienced flooding in the Satilla River basin during the 1998 floods include Appling, Atkinson, Bacon, Brantley, Coffee, Glynn and Jeff Davis.

Satilla River Subbasin (HUC 03070202)

Fecal Coliform Bacteria

The water use classification of fishing was not fully supported in six tributary stream segments due to exceedances of the water quality standard for fecal coliform bacteria. These may be attributed to a combination of urban runoff, septic systems, sanitary sewer overflows, rural nonpoint sources and/or animal wastes.

Erosion and Sedimentation

The water use classifications of fishing, recreation, and drinking water are potentially threatened in waterbodies by erosion and loading of sediment which can alter stream morphology, impact habitat, and reduce water clarity. Potential sources include urban runoff and development (particularly construction), unpaved rural roads, forestry practices, and agriculture. There are no stream segments listed at this time in this subbasin as not fully supporting designated water uses due to poor fish communities or sedimentation.

Low Dissolved Oxygen

The water use classification of fishing was not fully supported in seven tributaries due to dissolved oxygen concentrations less than standards. Low dissolved oxygen in the tributaries was attributed to nonpoint sources. Dissolved oxygen may be lower in these areas due to natural conditions.

Drought Conditions

Drought conditions during the 1998-2000 period impacted the Atlantic Coastal Plain region of the state, which includes the Ocmulgee, Oconee, Altamaha, Ogeechee, Savannah, St. Marys and Satilla river basins. According to EPD's 1998-2000 "Georgia Drought Report," the rainfall shortage in this region amounted to almost 25 inches. The report provides a summary of the environmental, economic, and social impacts of the drought and an objective assessment of the state's vulnerability and mitigation efforts. In addition, the report evaluates the management actions implemented by state and local authorities during the drought and presents a set of recommendations for improving drought preparedness and response.

Flooding

In March 1998, Georgia experienced widespread flooding due to heavy rainfall. The severity of the rain and the damages that resulted from flooding caused more than 65 percent of Georgia's counties to be declared federal disaster areas under Presidential Disaster Declaration 1209.

Satilla River Subbasin (HUC 03070203)

Fish Consumption Guidelines

The water use classification of fishing was not fully supported in five estuarine areas based on fish consumption guidelines due to PCBs, mercury and toxaphene. The guidelines are for several fish and shellfish species.

Low Dissolved Oxygen

The water use classification of fishing was not fully supported in two estuarine areas due to dissolved oxygen concentrations less than standards. Low dissolved oxygen was attributed to point and nonpoint sources. Dissolved oxygen may be lower in these estuarine areas due to natural conditions.

Metals

The water use classification of fishing was not fully supported in two estuarine areas (Gibson and Purvis Creeks) due to an industrial hazardous waste site.

Salt Water Intrusion

The potential of saltwater intrusion in the coastal areas is caused by heavy pumping of groundwater for municipal and industrial purposes. The demand for water due to population growth has decreased water pressure in the Upper Floridan aquifer, which increases the potential for saltwater entering the fresh water supply of the of the aquifer. Saltwater contamination threatens not only groundwater quality in coaster Georgia, but portions of northeast Florida and southeast South Carolina.

Flooding

In March 1998, Georgia experienced widespread flooding due to heavy rainfall. The severity of the rain and the damages that resulted from flooding caused more than 65 percent of Georgia's counties to be declared federal disaster areas under Presidential Disaster Declaration 1209. Counties that experienced flooding in the Satilla basin include Appling, Atkinson, Bacon, Brantley, Coffee, Glynn, and Jeff Davis. Before 1998, the last

major flooding event in Georgia occurred in July 1994, when tropical storm Alberto moved into southwest Georgia and caused the worst flooding in the State's history.

6.2 Priorities for Water Quality Concerns

6.2.1 Short-Term Water Quality Action Priorities for EPD

Section 6.1 identifies known priority concerns for which management and planning are needed in the Satilla River basin. Because of limited resources, and, in some cases, limitations to technical knowledge, not all of these concerns can be addressed at the same level of detail within the current 5-year cycle of basin management. It is therefore necessary to assign action priorities for the short term based on where the greatest return for available effort can be expected.

Current priorities for action by EPD (2000) are summarized in Table 6-3 and discussed below. These reflect EPD's assessment of where the greatest short-term return can be obtained from available resources. These priorities were presented to and discussed with the local advisory committee in March 2000. The priorities were also public noticed and approved by the USEPA as part of the Georgia CWA 303(d) listing process in 2000 and discussed in the report, *Water Quality in Georgia, 1998-1999.*

Assigning Priorities for Stream Segments

For several waters in the Satilla River basin and other river basins around the state, currently planned control strategies are expected to result in attainment of designated uses. EPD resources will be directed to ensure that the ongoing pollution control strategies are implemented as planned and water quality improvements are achieved. These waters on the Georgia 2000 305(b)/303(d) List are identified as active 305(b) waters, and are the highest priority waters, as these segments will continue to require resources to complete actions and ensure standards are achieved. These stream segments have been assigned priority one (See Appendix E).

Table 6-3. EPD's Short-Term Priorities for Addressing Waters Not Fully Supporting Designated Use

Priority	Type
1	Segments where ongoing pollution control strategies are expected to result in achieving support of designated uses; active special projects.
2	Segments with multiple data points which showed metals in excess of water quality standards and segments in which dissolved oxygen is an issue.
3	Waters for which urban runoff and generalized nonpoint sources have resulted in violations of standards for fecal coliform bacteria and waters for which fish consumption guidelines are in place due to air deposition of mercury.

Second priority was allocated to segments with multiple data points which showed metals concentrations from nonpoint sources in excess of water quality standards and to segments in which dissolved oxygen concentration was an issue.

Third priority was assigned to waters where air deposition, urban runoff or general nonpoint sources caused fish consumption guidelines listings, and/or metal or fecal coliform bacteria standards violations. Waters added to the Georgia 303(d) list by EPA were also assigned to third priority. Within the current round of basin planning these sources will be addressed primarily through general strategies of encouraging best management practices for control of stressor loadings. In addition, additional work will

be initiated to implement approved TMDLs on waters in this group. TMDLs have been completed on those waters in Appendix E that have a "3" in the column labeled 303(d).

Several issues helped forge the rationale for priorities. First, strategies are currently in place to address the significant water quality problems in the Satilla River basin and significant resources will be required to ensure that these actions are completed. Second, the vast majority of waters for which no control strategy is currently in place are listed due to fish consumption guidelines or as a result of exceedance of fecal coliform bacteria due to urban runoff or nonpoint At the present time, the efficacy of the standards for fecal coliform bacteria standard are in question in the scientific community, as described in Section 4.2. Also, there is no national strategy in place to address air deposition of mercury which is thought to cause the mercury which contributes to the fish tissue guidance listings.

6.2.2 General Long-Term Priorities for Water Quality Concerns

Long-term priorities for water quality management in the Satilla River basin will need to be developed by EPD and all other stakeholders during the next iteration of the basin management cycle. Long-term priorities must seek a balance between a number of different basinwide objectives. These objectives include:

- Protecting water quality in lakes, rivers, streams, and estuaries through attainment of water quality standards and support for designated uses;
- Providing adequate, high quality water supply for municipal, agricultural, industrial, and other human activities;
- Preserving habitat suitable for the support of healthy aquatic and riparian ecosystems;
- Protecting human health and welfare through prevention of water-borne disease; minimization of risk from contaminated fish tissue, and reduction of risks from flooding; and
- Ensuring opportunities for economic growth, development, and recreation in the region.

6.3 Priorities for Water Quantity Concerns

Groundwater overuse and saltwater intrusion is a major concern for water quantity in the Satilla basin. EPD has placed limitations on additional withdrawals of groundwater in the affected areas. This has effectively slowed the rate of additional contamination. In April, 1997, EPD implemented an Interim Strategy to protect the Upper Floridan Aquifer in the 24 coastal counties from salt-water intrusion which includes 12 counties in the Ogeechee basin. The strategy, developed in consultation with South Carolina and Florida, will continue until December 31, 2005 at which time EPD plans to implement a Final Strategy that will (a) stop salt-water intrusion before municipal water supply wells on Hilton Head Island, South Carolina and Savannah, Georgia are contaminated and (b) prevent an existing salt-water problem at Brunswick, Georgia from worsening. To accomplish this objective, EPD will do the following:

(1) The General Assembly has provided funds to conduct expanded scientific and feasibility studies to determine with certainty how to permanently stop the salt-water intrusion moving towards Hilton Head Island, South Carolina and Savannah, Georgia and how to prevent the existing salt-water intrusion at Brunswick, Georgia from worsening.

(2) Require the development of comprehensive local water supply plans in a 24 county area of southeast Georgia. These are required by December 31, 2000 from all 24 counties as a condition of issuing any future proposed public water, agriculture, or industry water withdrawal permits. This work has been completed.

(3) Impose caps on Upper Floridan groundwater use in Glynn County, Chatham County, and portions of Bryan and Effingham Counties, to avoid worsening the rate of salt-water intrusion at HiltonHead-Savannah and at Brunswick.

(4) Reduce groundwater use in Chatham County by at least 10 million gallons per day by December 31, 2005 through conservation and substitution of surface water for groundwater. This will be affirmed through reductions in groundwater use permits. The commitment will be met by 2005.

(5) Allow, on an interim basis, increases in groundwater withdrawals in the areas of southeast Georgia that have little impact on salt-water intrusion problems. In a policy modification dated September 19, 2001, no further increases in the Upper Floridan aquifer production in the coastal counties will be permitted without associated decreases elsewhere. Use of alternate aquifers may be considered.

(6) Encourage and promote water conservation and reduced groundwater usage wherever feasible, throughout southeast Georgia.

6.3.1 Priorities for Competing Demands

With regard to the priority to be placed on meeting competing demands for future water use, the EPD (in conjunction with a broad group of stakeholders from north, central, and southwest Georgia) has established a set of "guiding principles" which will be followed in developing the state's position regarding the allocation of water. These principles are partially based upon the prioritization given to meeting categories of water needs under Georgia law (i.e., municipal needs are the first priority, and agricultural water needs are second; all other water needs follow these two). The principles are summarized below:

1. Municipal (M&I) demands have the highest priority.
2. Agriculture needs must be satisfied.
3. Minimum instream flow rates must be met in order to preserve water quality.
4. If other demands (e.g., industrial, recreation, hydropower, navigation, and environment) can not be met under conditions of water shortage, efforts will be made to optimize the mix of economic and environmental values.